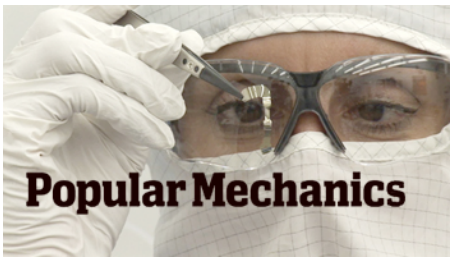
LAWRENCE LIVERMORE
REPORT

A weekly collection of scientific and technological achievements from Lawrence Livermore National Laboratory, Sept. 27-Oct. 1, 2010

Artificial retina breaks through *Popular Mechanics*



Technician Terri Delima inspects an array.

The team that helped to develop the Argus II retinal implant, including Lawrence Livermore, has been recognized with a *Popular Mechanics* 2010 Breakthrough Award.

Popular Mechanics' Breakthrough Awards, which were announced Tuesday, recognize the innovators and products poised to change the world in the fields of technology, medicine, aviation, environmental engineering and more.

"From soccer balls that generate light to cell phones that diagnose medical conditions, our diverse, inspired winners are making the seemingly impossible a reality," says James B. Meigs, editor-in-chief of *Popular Mechanics*.

The Argus II retinal implant is designed to restore vision to people who are blind because of such degenerative retinal diseases as macular degeneration and *retinitis pigmentosa*. There are 10 million people in the United States with degenerative retinal diseases and millions more worldwide.

To read more, go to the Web.

NARAC gets the weather bug

The Laboratory will work with AWS Convergence Technologies, which owns the "WeatherBug" system, on a weather information system to facilitate enhanced situational awareness for the Lab's National Atmospheric Release Advisory Center (NARAC).

The WeatherBug Network is made up of approximately 8,000 observation stations around the country.

If there's a chemical, biological or nuclear attack, the system will be used to give information on how radiation or dangerous chemicals might be spreading in the atmosphere.

NARAC is the Department of Energy's plume modeling center and serves as the operations hub of the Department of Homeland Security (DHS)-led Interagency Modeling and Atmospheric Assessment Center (IMAAC). NARAC's mission is to provide timely and accurate real-time advisories to emergency managers throughout the United States for rapid decision-making during chemical, biological and radiological/nuclear atmospheric releases.

AWS signed a memorandum of understanding, or MOU, with the Department of Energy and the National Nuclear Security Administration for this project, which is a public-private partnership.

To read more, go to the Web.

Lab's expertise plays integral role in innovation hub

A schematic rendering of some of the details of the $159 million "Energy Innovation Hub" to be up and running at the Navy Yard in Philadelphia.

The Laboratory's expertise in integrated multi-physics modeling will be an integral part of a new national effort in energy-efficient building research.

The goal of the Greater Philadelphia Innovation Cluster for Energy Efficiency Buildings (GPIC) is to establish The Navy Yard, in Philadelphia and the surrounding area as the national center for energy-efficient buildings research, education, policy and commercialization.

The new center will be led by Penn State University in partnership with LLNL and numerous other public, private and academic partners. The Department of Energy's $122 million in funding will cover the core research and development activities of the Energy Efficiency Hub. Several federal agencies have been working in partnership with DOE to establish and fully leverage the research cluster with an additional $7 million.

One overall goal of the research is to develop integrated end-to-end code for simulating building fluid/thermal flows and that's where Livermore's computing codes and overture frameworks come in. In addition, LLNL will provide algorithms for uncertainty quantification. GPIC partner IBM will develop the framework to integrate the code components and other GPIC partners United Technologies Corporation and Virginia Tech will work on simulating the control systems.

To read more, go to the Web.

Latest *Newsline* available

Newsline provides the latest Lab research and operations news. See the most recent issue at Newsline.

LLNL applies and advances science and technology to help ensure national security and global stability. Through multi-disciplinary research and development, with particular expertise in high-energy-density physics, laser science, high-performance computing and science/engineering at the nanometer/subpicosecond scale, LLNL innovations improve security, meet energy and environmental needs and strengthen U.S. economic competitiveness. The Laboratory also partners with other research institutions, universities and industry to bring the full weight of the nation's science and technology community to bear on solving problems of national importance.

To send input to the Livermore Lab Report, send e-mail mailto:labreport@llnl.gov.

The *Livermore Lab Report* archive is available at:
https://publicaffairs.llnl.gov/news/lab_report/2010index.html